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REMARKS

Entry of this Amendment is proper because it narrows the issues on appeal and does not require further searching by the Examiner.

Claims 1-3 and 6-22 are all the claims presently pending in the application. Claims 1 and 3 have been amended to more particularly define the claimed invention.

It is noted that the amendments are made only to overcome the Examiner's non-statutory objections, and to more particularly define the invention and not for distinguishing the invention over the prior art, for narrowing the scope of the claims, or for any reason related to a statutory requirement for patentability. It is further noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

Applicant gratefully acknowledges the Examiner's indication that claims 1-3 and 6-14 are allowed. Applicant respectfully submits, however, that all of the claims are allowable.

Claims 15-22 stand rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Ishibashi (JP 2001-196641) in view of Susumu et al. (JP 08-330637) and further in view of Okazaki (US 2002/0024299).

This rejection is respectfully traversed in view of the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as recited in claim 15) is directed to a light-emitting diode (LED) lamp including a metal pattern formed on a substrate and comprising a copper layer, a resist layer bonded to a surface of the copper layer, a light-emitting element formed on the substrate and electrically connected to the metal pattern, and a frame member formed outside the light-emitting element, at least a portion of the frame member being formed on the resist layer.

The claimed invention (e.g., as recited in claim 22) is directed to a lamp structure for a light-emitting element. The lamp structure includes a substrate on which the light-emitting element is mounted, a metal pattern formed on the substrate and comprising a copper layer, a resist layer bonded to a surface of the copper layer, and a frame member formed outside the

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light-emitting element, at least a portion of the frame member being formed on the resist layer.

To avoid cracking a metal pattern 14, 15, 16 during formation of a resin sealing portion, a related art LED lamp includes a resist 3 formed between a metal pattern 14, 15, 16 and a resin sealing portion (Application at page 1, line 18-page 2, line 11). However, the resist 3 does not adhere well to a gold layer of the metal pattern, so the resist 3 separates from the metal pattern 14, 15, 16 (Application at Figure 5B).

An exemplary aspect of the claimed invention, on the other hand, may include a frame member formed outside the light-emitting element, at least a portion of the frame member being formed on the resist layer (Application at Figures 1, 3; page 11, lines 4-15). The resist may adhere well to the copper film, which may help to prevent the resist from separating from the metal pattern (Application at page 15, lines 3-13).

II. THE ALLEGED PRIOR ART REFERENCES

The Examiner alleges that Ishibashi would have been combined with Susumu and Okazaki to form the invention of claims 15-22. Applicant submits, however, that these alleged references would not have been combined and even if combined, the combination would not teach or suggest each and every feature of the claimed invention.

Ishibashi discloses a semiconductor device which includes a luminescence equipment of a surface mold mount, which includes a resin package 6 and a light-emitting device 4 (Ishibashi at Figure 2).

Susumu discloses an LED lamp which includes a solder resist film 7 formed between a conductive pattern 3 and a molded part 6 (Susumu at Figure 6).

Okazaki discloses a chip-type light-emitting device which includes a reflective case 5 formed on a chip substrate 4 (Okazaki at Figure 2).

However, Applicant AGAIN submits that these alleged references are unrelated. Indeed, Ishibashi is intended to **prevent solder 53 from permeating a resin package 6** by forming a notching slot 7 in a copper plating (Ishibashi at [0009]-[00012]), whereas Susumu is intended to **prevent a terminal part 3a from being cracked** by forming a solder resist film 7 on the substrate 2 (Susumu at Abstract), and Okazaki is intended to **prevent a leakage current** by

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using a light-shielding member which shields a diode from light (Okazaki at [0021]). Clearly, no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

In fact, Applicant submits that the references provide no motivation or suggestion to urge the combination as alleged by the Examiner. Indeed, these references clearly do not teach or suggest their combination. Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

Moreover, neither Ishibashi, nor Susumu, nor Okazaki, nor any alleged combination teaches or suggests *"a frame member formed outside said light-emitting element, at least a portion of said frame member being formed on said resist layer"*, as recited, or example, in claim 15 and claim 22 (Application at Figures 1, 3; page 11, lines 4-15). As noted above, the resist may adhere well to the copper film, which may help to prevent the resist from separating from the metal pattern (Application at page 15, lines 3-13).

Clearly, this novel feature is not taught or suggested by the cited references. Indeed, **the Examiner concedes that Ishibashi and Susumu do not teach or suggest this feature on pages 3-4 and page 5 of the Office Action**, but alleges that "Okazaki teaches that at least a portion of the frame member is formed on the resist layer (7 of Fig. 1 of '637) of Ishibashi-Susumu". Applicant submits, however, that this is unreasonable.

First, Applicant would point out that the Examiner is alleging that it is easy to hit upon the claimed invention of claims 15-22 by combining the copper plating layers 3a, 3b of Ishibashi and a solder resist of Susumu. However, since both of the copper plating layer of Ishibashi and the solder resist of Susumu are provided for preventing the influx of the solder, it would likely be impossible to think purposely of providing the solder resist on the copper plating layer in order to improve the adhesion force and reduce the heat stress caused by a difference of heat expansion.

Further, in combining the copper plating layers of Ishibashi and the solder resist of Susumu, since a cutout groove is buried with the resist, the effect would be prevent the influx of the solder. Indeed, as Applicant pointed out in the previous Amendment, **forming the resist in**

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the notching slot 7 as alleged by the Examiner would defeat the sole purpose of the notching slot 7 (i.e., preventing solder 53 from permeating a resin package 6 during a flow mounting).

Second, contrary to the Examiner's allegations, Okazaki clearly does not teach or suggest a frame member formed outside a light-emitting element, at least a portion of the frame member being formed on the resist layer (Application at Figures 1, 3; page 11, lines 4-15). The Examiner again attempts to equate the reflective case 5 in Okazaki with the frame member of the claimed invention. However, this is clearly unreasonable.

Again, Okazaki is intended to prevent a leakage current by using a light-shielding member which shields a diode from light (Okazaki at [0021]). Specifically, Okazaki teaches that the reflective case 5 is formed on a substrate 4. However, nowhere does Okazaki teach or suggest that the reflective case 5 is formed anywhere near a molded part formed on a light-emitting element.

Therefore, it is clearly unreasonable to attempt to equate the reflective case 5 in Okazaki with the resin frame member of the claimed invention (e.g., see Okazaki at Figure 5D).

Further, Applicant would point out that the Examiner has not indicated why the reflective case 5 in Okazaki would have been combined with Susumu to form the reflective case 5 on the resist layer 7. Indeed, Applicant respectfully submits that there would be little if any reason for forming the reflective case 5 (of Okazaki) on the resist layer 7 (of Susumu).

Therefore, Okazaki clearly do not make up for the deficiencies in Ishibashi and Susumu.

Therefore, Applicant submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every feature of the claimed invention. Therefore, Applicant respectfully request that the Examiner withdraw this rejection.

III. FORMAL MATTERS AND CONCLUSION

Applicant notes that the Title has been amended to address the Examiner's concerns.

In view of the foregoing, Applicant submits that claims 1-3 and 6-22, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in

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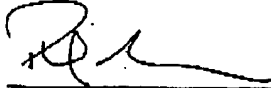
condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: 12/7/06



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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that the foregoing was filed by facsimile with the United States Patent and Trademark Office, Examiner Hana Asmat Sanei, Group Art Unit # 2879 at fax number (571) 273-8300 this 7th day of December, 2006.



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